

a deflection unit having deflection surfaces for deflecting light;

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a light source that emits light beams in such directions that the light beams cross each other on at least one of the deflection surfaces; and

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a restricting unit provided on each of the deflection surfaces that shapes the light beams to achieve a desired spot size.

REMARKS

Favorable reconsideration of this application is respectfully requested.

Claims 2, 3, 5-8, 12, and 14-35 are pending in this application. Claims 1, 4, 9-11, and 13 are cancelled, claims 12, 14, and 15 are amended, and claims 32-35 are added by the present response. Claims 5-8 and 18-31 stand withdrawn from consideration. Claims 2 and 3 are allowed. Claims 12 and 14-17 were rejected under 35 U.S.C. § 112, second paragraph. Claims 1, 4, and 9-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. patent 5,999,345 to Nakajima et al. (herein "Nakajima") in view of U.S. patent 5,610,647 to Takada.

Initially, applicants gratefully acknowledge the indication of the allowance of claims 2 and 3.

Addressing now the rejection of claims 12 and 14-17 under 35 U.S.C. § 112, second paragraph, that rejection is traversed by the present response.

Each of claims 12, 14, and 15 is amended by the present response to clarify the recitations therein, and to particularly clarify the language noted as unclear on page 2 of the Office Action. The presently submitted amendments to claims 12, 14, and 15 are believed to address the rejection of those claims under 35 U.S.C. § 112, second paragraph.

Addressing now the rejection of claims 1, 4, and 9-13 under 35 U.S.C. § 103(a) as unpatentable over Nakajima in view of Takada, that rejection is traversed by the present response.

It is initially noted that each of claims 1, 4, 9-11, and 13 is cancelled by the present response. However, it is respectfully submitted that claim 12 patentably distinguishes over the teachings of Nakajima in view of Takada.

Claim 12 requires a structure in which a multibeam scan apparatus includes a light source emitting light beams, in which outgoing beam directions of the light beams cross each other at a point. A deflection unit deflects the light beams. Further, as recited in claim 12 “the light beams cross each other on a deflection surface of the deflection unit”. Such a feature is believed to be neither taught nor suggested by Nakajima or Takada, and thereby such a feature is believed to distinguish over the combination of teachings of Nakajima in view of Takada. Both of the noted references to Nakajima and Takada disclose the use of a polygon mirror as a deflection unit. In either case, in neither Nakajima nor Takada do “light beams cross each other on a deflection surface of the deflection unit”. Thereby, independent claim 12 patentably distinguishes over the combination of teachings of Nakajima in view of Takada.

The present response also sets forth new claims 32-35 for examination. Each of new claims 32-35 also recites a deflection unit and the light beams either overlapping or crossing each other on at least one of the deflection surfaces of the deflection unit. For similar reasons as discussed above with respect to claim 12, such features are believed to distinguish over the applied art. Thereby, new claims 32-35 are also believed to be allowable.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested this case be passed to issue.

Respectfully submitted,

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IN THE CLAIMS

Claims 1, 4, 9-11 and 13. (Cancelled).

Please amend Claims 12, 14, and 15 to read as follows:

12. (Amended) A multibeam scan apparatus comprising:

a light source emitting light beams, outgoing beam directions in which the light beams travel being arranged so as to cross each other at a point;

a deflection unit deflecting the light beams;

an optical unit causing the light beams from the deflection unit to form images on a scanned surface; and

an aperture situated close to said point and arranged to shape the light beams, wherein said aperture is situated between said light source and said deflection unit to shape the light beams to have a given spot size before the light beams enter said optical unit that forms the images, and

[wherein the light beams emitted by the light source cross each other at a position close to the deflection unit,]

[wherein said aperture shapes the light beams so as to have a given spot size, the aperture being positioned close to said position, and]

wherein the light beams cross each other on a deflection surface of the deflection unit.

14. (Amended) A multibeam scan apparatus comprising:

a light source emitting light beams, outgoing beam directions in which the light beams travel being arranged so as to cross each other at a point;

a deflection unit deflecting the light beams;

an optical unit causing the light beams from the deflection unit to form images on a scanned surface; and

an aperture situated close to said point and arranged to shape the light beams, wherein said aperture is incorporated into deflection surfaces of [situated between said light source and] said deflection unit to shape the light beams to have a given spot size before the light beams enter said optical unit that forms the images, and the given spot size of the light beams is larger than a size of each of the deflection surfaces.

wherein the light beams emitted by the light source cross each other at a position close to the deflection unit[.],

[wherein said aperture shapes the light beams so as to have a given spot size, the aperture being positioned close to said position, and]

[wherein the aperture is incorporated into deflection surfaces of the deflection unit, and the given spot size of the light beams is larger than a size of each of the deflection surfaces.]

15. (Amended) A multibeam scan apparatus comprising:

a light source emitting light beams, outgoing beam directions in which the light beams travel being arranged so as to cross each other at a point;

a deflection unit deflecting the light beams;

an optical unit causing the light beams from the deflection unit to form images on a scanned surface; and

an aperture situated close to said point and arranged to shape the light beams, wherein said aperture is incorporated into deflection surfaces of [situated between said light source and] said deflection unit to shape the light beams to have a given spot size before the light beams enter said optical unit that forms the images, and the given spot size of the light beams is larger than a size of each of the deflection surfaces.

[wherein said aperture shapes the light beams so as to have a given spot size, the aperture being positioned close to a position at which the light beams cross each other, and]

[wherein the aperture is incorporated into deflection surfaces of the deflection unit, and the given spot size of the light beam is larger than a size of each of the deflection surfaces.]

Claims 32-35. (New).